

NHBC

Mar. 30, 1921

HARRY A. COLE,
702 FOREST AVE.,
ANN ARBOR, MICH.

Bausch & Lomb

Supplement

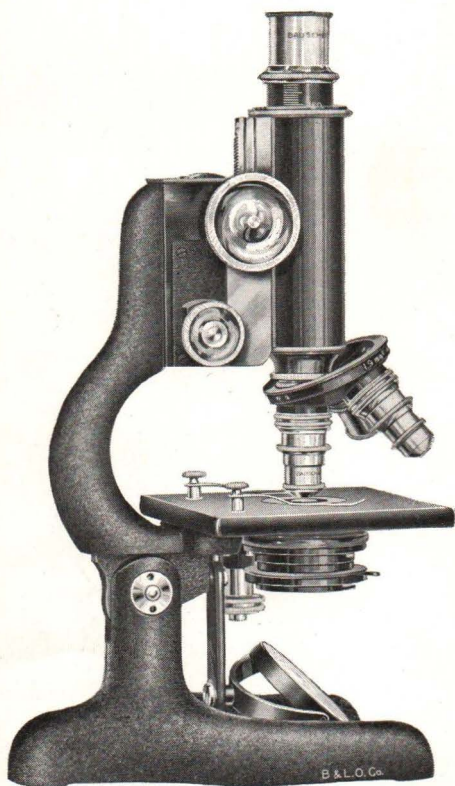
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The Mine and Smelter Supply Co.



BAUSCH & LOMB MICROSCOPES

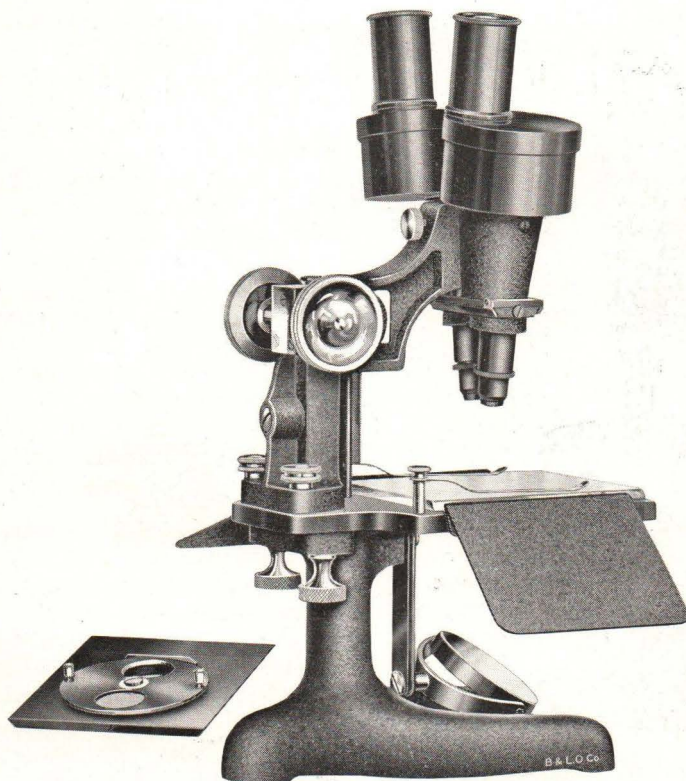


Microscope FFS—Bausch & Lomb.

An especially popular model, embodying all recent improvements in microscope development; fine focusing adjustment is of approved lever type, with fine focusing heads on side of arm in same plane as coarse adjustment heads and operating in same direction, greatly facilitating focusing; complete rotation of micrometer heads produces vertical movement of 0.25; fine adjustment has positive stops and also ceases to act when objective touches slide; stage is 102 mm square and is sheathed in permanent coating of vulcanized rubber; substage, containing mounting for Abbe Condenser, is focused by quick-acting screw, which turns substage entirely to one side at limit of motion downward; stand is finished in the new, crystal black finish, which does not mar nor show finger marks; arm is of long, curved type, leaving stage entirely free for manipulation of object; furnished complete in hardwood case, with optical equipments indicated below.

Cat. No.	Objectives		Eyepieces	Nosepieces	Abbe Condenser	Price
	Dry	Oil Immersion				
FFS 6	16mm 4mm		5× 10×	Circular Double	1.20 N. A.	\$72.75
FFS 8	16mm 4mm	{ 1.9 mm 1.30 N.A. }	5× 10×	Circular Triple	1.20 N. A.	110.00
FFS 10	16mm 4mm	{ 1.9 mm 1.32 N.A. }	5× 10×	Circular Triple	1.20 N. A.	140.00

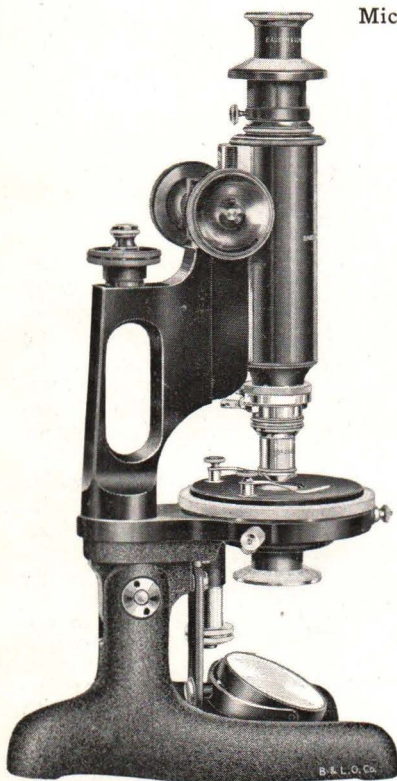
Assayers' and Chemists' Supplies



Microscope KA—Bi-ocular, Bausch & Lomb. Greenough type; arm, which can be removed, provides for extraordinary vertical range of working distance up to 155 mm, measuring from lower edge of nosepiece to stage; body tubes are combination of two microscope tubes, upper parts of which are fitted with Porro prisms and are rotatable for adjusting position of eyepieces to observer's pupillary distance, and as one image merges with the other, the object is seen stereoscopically, erect and not transposed; nosepiece takes

self-centering slides, upon which each pair of objectives is mounted with means for centering one with the other; focusing adjustment is of our standard rack and pinion, with pinion heads placed with relation to body tubes so as to eliminate completely inconvenience caused where these parts are close together; stage is of metal, provided with two removable plates, one glass and one metal, metal hand rests and spring clips; pinion heads, set screws and stage clips are nickel-plated, while other parts are in black crystal finish, alcohol proof; furnished complete in hard wood case, with optical equipments listed below.

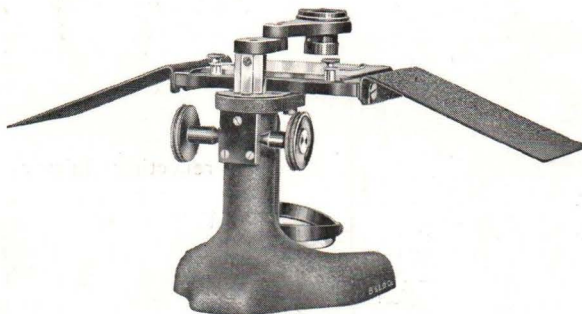
Cat. No.	Paired Objectives	Paired Eyepieces	Price
KA 1	40 mm	10×	\$90.00
KA 3	48 mm 32 mm	6.4× 10×	110.00
KA 5	55 mm 40 mm 24 mm	5× 7.5× 10×	131.00
2120	Stage, taking plates 96 x 135 mm, in place of regular stage extra		5.00



Microscope M—Chemical, Bausch & Lomb. Can be used for metallurgical and bacteriological work, as well as chemical examinations; coarse adjustment by standard rack and pinion, with stop to prevent pinion from over-riding rack; fine adjustment of our lever type, ceasing to act when objective touches slide; stage, with vulcanite top and provided with spring clips and centering screws, is circular revolving type with milled edge, graduated on circumference in single degrees, with every tenth line numbered; substage, consisting of mounting for polarizer, which is swung to left of optical axis when screw reaches limit of motion downward, is adjustable for focus by quick-acting screw of long range; analyzer, consisting of Thompson prism mounted in collar, which revolves smoothly in cylindrical mounting fitted over draw tube and slotted to engage stud for zero point, can be easily removed for insertion of microscope eyepiece; polarizer consists of high-grade Nicol prism, mounted with revolving ring graduated in two-degree divisions, with entire mounting securely supported in substage and fixed for zero point by stud which engages corresponding slot; entire instrument is finished in durable black; furnished complete with hard wood case and optical equipments indicated below.

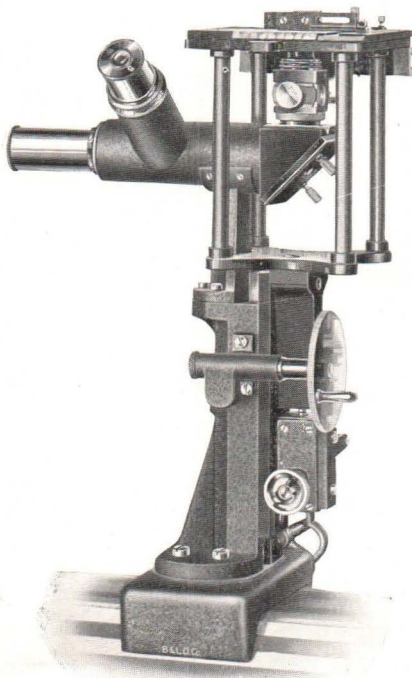
Cat. No.	Objectives Dry	Cross Hair Eyepieces	Quick Changing Nosepieces	Price
M 1	16 mm 8 mm	10× 12.5×	With Two Rings	\$116.50
M 2	16 mm 8 mm	10× 12.5×		125.75
M 3	32 mm 16 mm 8 mm	{ 5× 7.5× } { 10× 12.5× }	With Three Rings	145.00
2130	Auxilliary Stage, fitting subs.age for use in metallurgical work			5.25

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Microscope W — Dissecting, Bausch & Lomb. A particularly serviceable stand because of its hand rests and the ease with which it may be focused; focusing adjustment is by standard rack and pinion with milled head on either side, giving a range of 80 mm; stage is of glass, 80 x 66 mm, removable, with second set of grooves beneath stage for black and white metal plate, supplied for use as opaque background; lens arm is of heavy construction, jointed so that entire field of stage may be covered, maximum distance from center of pillar to center of lens being 80 mm; base and pillar are finished in black crystal, alcohol-proof; furnished complete in wood carrying case.

Cat. No. (B. & L.)	Lenses		Price
	Focal Lengths	Formulae	
W 1	25 mm	Doublet	\$13.50
W 2	38 mm 19 mm	Doublet	15.00
W 3	25 mm	Coddington	14.50
W 4	38 mm 19 mm	Coddington	17.00
W 5	25 mm	Triple Aplanat	17.25
W 6	38 mm 13 mm	Triple Aplanat	22.50



Metallographic Microscope, Model IL

—Bausch & Lomb. Designed to meet the demand for a more rigidly constructed, inverted microscope for use with large specimens; horizontal body tube, with reflecting mirror and objective carrier, is supported by substantial pillar; coarse adjustment is by rack and pinion operated by worm gear, which automatically locks under downward pressure on stage, preventing it from dropping down; fine adjustment is by rack and pinion, moving stage up and down; stage, $4\frac{1}{2}$ in. square with rack and pinion movements in two directions at 90° to each other, is very rigid and capable of supporting large specimens; body tube is provided with adjustable observation tube with sliding inner tube, fitted with 90° prism by means of which the beam of light is reflected to the eyepiece of the observation tube; vertical illuminator and objective are mounted on sliding plate fitting on top of the reflecting box; end of vertical illuminator, which is of special design so arranged that either clear

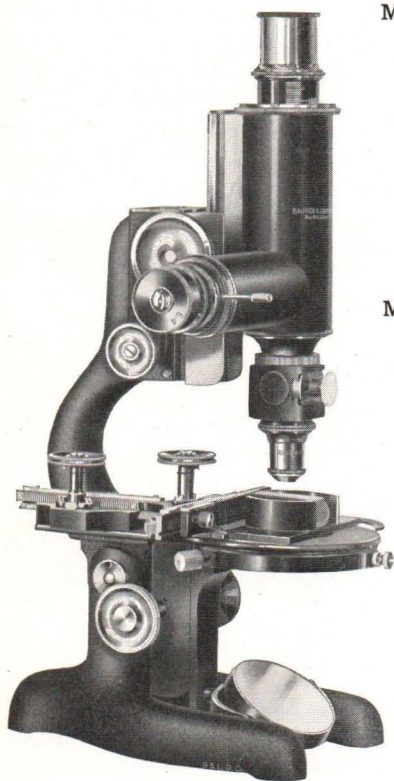
glass or totally reflecting mirror can be used interchangeably in the same mounting, is turned out with slight taper, into which fits a larger ring screwed to each objective, making possible the quick interchange of objectives. (For use only with G S A Camera.)

Each \$245.00.

Metallurgical Microscope, Model IL-9—Bausch & Lomb. Same as Model IL, but with 32, 16 and 4 mm achromatic objectives and one pair each $6.4\times$ and $10\times$ eyepieces.

Each, \$282.50.

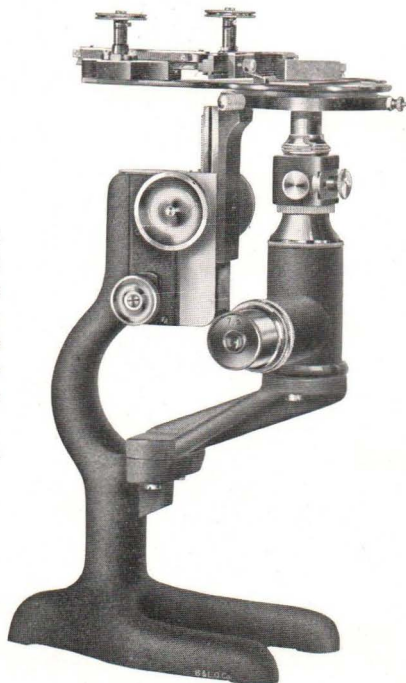
Metallurgical Microscope, Model FSMT—Bausch & Lomb. Similar to Model FSM, described elsewhere in this catalog, but with supplementary tube fastened to body tube at 90° angle to vertical axis, which may be pushed in to intercept beam of light for photographing; furnished with 32, 16 and 4 mm objectives, two each 6.4× and 10× eyepieces, vertical illuminator and mechanical stage. Each, \$204.50.



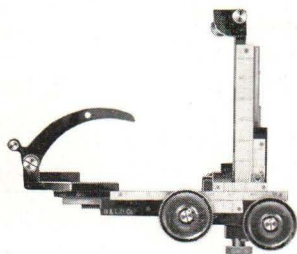
Microscope—IF-9, Bausch & Lomb. A small size inverted microscope, very satisfactory for use with small specimens; designed especially for use in conjunction with the type L Camera; when located on this camera, the observation tube comes at about the correct height for viewing if the observer is seated in an ordinary chair; stage, fitted with a mechanical stage with rack and pinion movements in two directions, is moved up and down by means of

a coarse and fine adjustment; observation tube, which rotates 90° about a vertical axis, may be used for visual observation directly, and then connected with the front of the camera for projecting the image on the ground glass; furnished complete with 32, 16 and 4 mm objectives, two eyepieces and mechanical stage.

Each \$190.00.

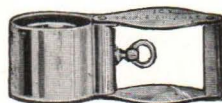


MICROSCOPE ACCESSORIES



2116 (B. & L.) Mechanical Stage—Bausch & Lomb.

Can be used on microscopes with square cornered stages; clamp is adjustable, with closed ends, front portion having top plate for instant leveling of stage; adjustment is by rack and pinion, giving equal speeds in both movements; both scales are graduated in single millimeters, with verniers reading to tenths; range allows examination of slides, 50 x 75 mm. from corner to corner; pinion heads are close together in fixed relative position; slide-holder, accommodating any sized slide up to 95 mm in length, is provided with adjustable stops, one of which is actuated by a spring to hold slide in place, the other provided with graduated scale for position readings; main parts, except scales, neatly finished in black lacquer to prevent reflections; scales are engraved on fine German silver; furnished in case. Each, \$23.00.



167 (B. & L.) Triple Aplanat Magnifier—Bausch & Lomb. In folding pocket case; of new construction, recommended for highest class of work; composed of two meniscus lenses of flint glass, separated by double convex lens of crown glass; have large field and are perfectly corrected for chromatic aberration; magnification, 10X; equivalent focal length, 25 mm (1 in.); diameter of field, 20 mm (13/16 in.). Each, \$5.50.

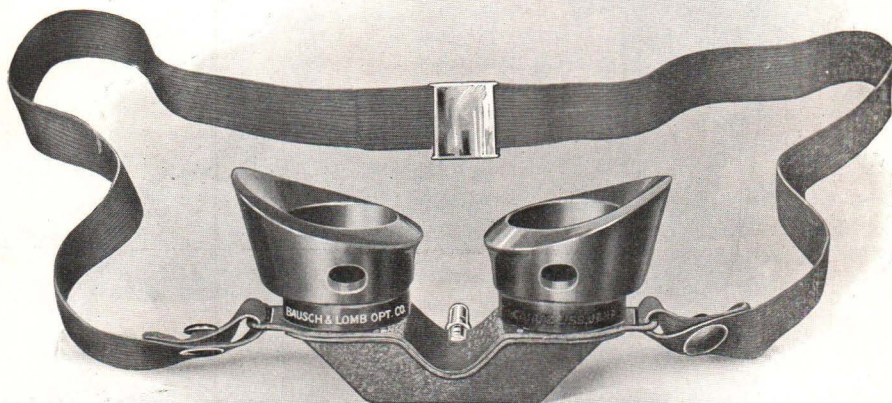
Binocular Magnifier—Bausch & Lomb. Provides freedom from eyestrain, improvement in general definition, perception of depth and true form and long working distance; optical systems are interchangeable, permitting a variety of magnifications to be used; vulcanite eyepiece caps are made to fit orbit of the eye; adjustable elastic head-band keeps instrument in place; pupillary distance of the eyes for far vision as well as magnification desired should be stated when ordering; price includes case and elastic headband.

Cat. No. (B. & L.)	E. F.		Magni- fication	Working Distance		Diameter of Field		Price
	cm	in.		cm	in.	cm	in.	
220	33.3	13	0.75X	30	11 3/4	10 x 14	4 1/8 x 5 1/2	\$18.00
232	25.	9 3/4	1 X	22	8 5/8	7 x 11	2 3/4 x 4 1/8	18.00
234	12.5	4 7/8	2 X	9	3 1/2	4 x 6	1 1/2 x 2 3/8	18.00
236	10.	4	2.5 X	7	2 3/4	3 x 4.5	1 1/4 x 1 3/4	18.00
238	8.3	3 1/4	3 X	5	2	2.5 x 3.5	1 x 1 1/8	18.00

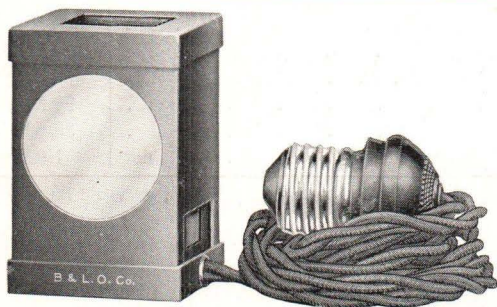
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BINOCULAR MAGNIFIER



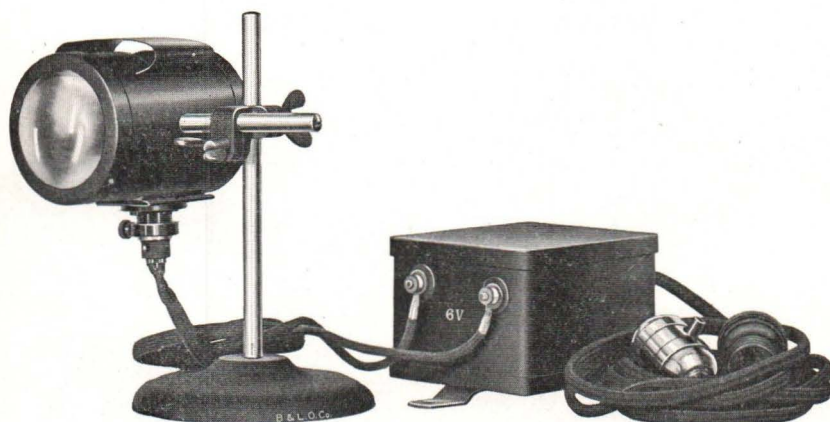
Cat. No. (B. & L.)	Specifications	Price
242	Illuminating Device, with flexible cord	\$10.00
243	Binocular Magnifier Stand	7.25
244	Additional pairs of objectives, 0.75 $\times$, 1 $\times$, 2 $\times$, 2.5 $\times$ or 3 $\times$; per pair	1.25
245	Battery in leatherette covered case (four volts)	1.75
246	Spare Battery	1.50
247	Flexible Cord	2.40
248	Spare Lamp (wire filament)	1.00
249	Fiber Headband, adjustable	3.50



1772 (B. & L.) Substage Lamp
—Bausch & Lomb. Features great compactness and simplicity; illuminant is small 15-watt Mazda lamp, 110-115 volts, direct or alternating current, connecting with any house socket, or can be made available for 220-volt current by use of small resistance coil (No. 1777, \$3.50 extra); housing, entirely of metal, has double, ventilated sides and top; deep-curve reflector, fixed behind lamp bulb, intensifies illumination; furnished with blue Each, \$5.00.

reflector, fixed behind lamp bulb, intensifies illumination; furnished with blue

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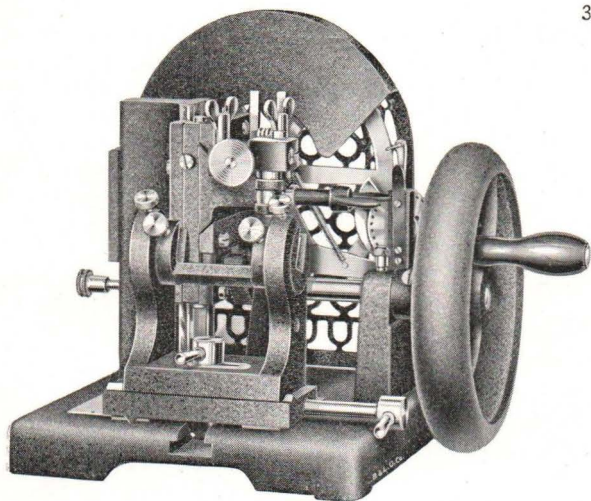


(B. & L.) Adjustable Microscope Lamp. Combines efficiency and convenience to a degree heretofore unattainable; may be used for all work with the microscope, including photomicrography with medium power objectives; lamp is 6-volt, 24-watt, gas-filled Mazda; lamp socket is carried in sliding plate, which runs the length of the housing and permits lamp to be adjusted with reference to the condenser; offered with ordinary bi-convex condenser (No. 1782) or with our aspheric condenser (No. 1784) which is corrected for spherical aberration; current can be drawn from any lamp socket, except that for alternating current a transformer is supplied to reduce voltage, while on direct current a rheostat is required.

Cat. No. (B. & L.)	Specifications	Price
1782	Microscope Lamp as described with regular spherical condensing lens and transformer for 110-volt, A. C. circuit	\$19.50
1784	Same but with Aspheric Condenser	29.50
1786	No. 1782 but with rheostat for 110-volt, D. C. or A. C. circuits, in place of transformer	20.50
1788	No. 1786 but with Aspheric Condenser	30.50
1787	6-volt, 24-watt, gas-filled bulb only net	1.00

Note—Rheostat for 220-volts, in place of 110-volts, No. 1786 and 1788, extra \$2.50.

BAUSCH & LOMB MICROTOMES



3000 (B. & L.) Microtome—Minot Automatic Rotary, Bausch & Lomb. Is an ideal instrument for rapid serial sectioning, cutting sections with accuracy from 25 microns down to 1 micron in thickness; feeding mechanism operates automatically; object disc, 25 mm diameter, in adjustable holder, can be oriented to give any desired cutting angle; the whole instrument moves on a vertical slide and is wheel driven; knife holder has various adjustments for placing it in proper relation to the object; finished in alcohol-proof crystal black; length, 19.6 cm; width, 21.2 cm; height, 21.4 cm; furnished without knife, in strong wooden carrying case with handle. Each, \$120.00.

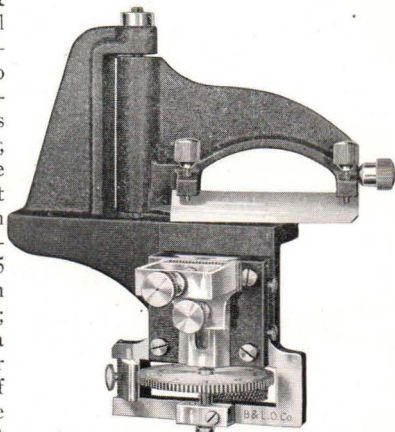
Knife Blade. 125 mm. long, with 120 mm. cutting edge; without handle.

Each, \$9.00.

Handle. For use in sharpening knife.

Each, \$2.00.

3054 (B. & L.) Microtome—Clinical, Bausch & Lomb. This is an instrument of unusual simplicity, designed for sectioning of objects embedded in paraffin or celloidin, also for frozen sections when freezing attachment is applied; solid metal frame carries hinged arm in which knife is clamped; knurled knob at end swings arm and knife over object when cutting sections; object is fed by rotating the ratchet wheel, each tooth representing 5 microns; single divisions of graduations on wheel represent 5 microns, the fifth line being longer than the rest and every tenth line numbered; pawl at left of wheel is set to prevent a reverse movement and may be released for lowering object clamp; object clamp is of one piece, extremely rigid, and will take objects 30 x 22 mm; furnished without knife. Each, \$25.00.



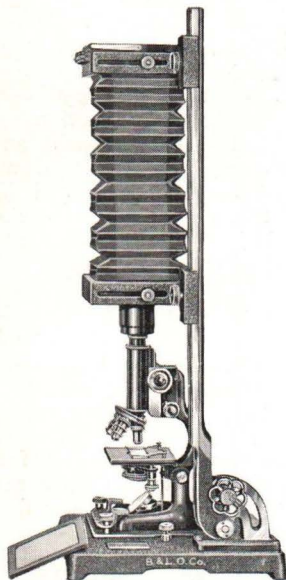
Knife Blade. 90 mm. long, with 82 mm. cutting edge, without handle.

Each, \$7.00.

Handle. For use in sharpening knife.

Each, \$2.00

BAUSCH & LOMB PHOTOMICROGRAPHIC APPARATUS



Photomicrographic Camera, Model H—Bausch & Lomb. Designed for medium power work in any laboratory; consists of heavy base, $13 \times 9\frac{3}{4}$ in., adjustable microscope plate, 8×6 in., to carry any standard microscope, 25 in. optical bed, graduated to 60 cm, carrying camera parts and provided with inclination joint, which permits it to be adjusted at any angle between horizontal and vertical; two camera supporting frames are clamped to optical bed and carry bellows long enough to accommodate work at any distance along the bed; ground glass focusing screen with clear center; double plate-holder for 4×5 -in. plates, with kits for $3\frac{1}{4} \times 4\frac{1}{4}$ -in. plates; light tight connector fitted to front board (no shutter).

H-5 Photomicrographic Camera, as described.

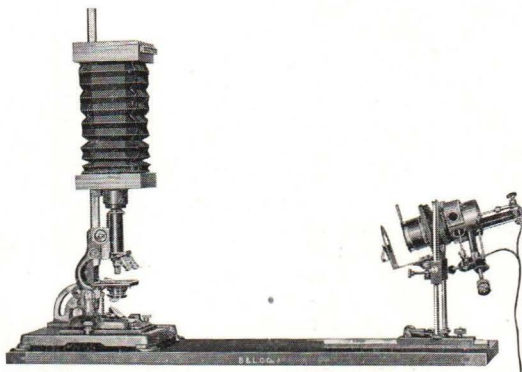
Each, \$70.00.

H-7 Similar to H-5, but with camera parts for 5×7 -in. plates.

Each, \$75.00.

Automatic Shutter. Has steel leaves, with maximum opening of 40 mm, and may be set for instantaneous, bulb or time exposure.

Each, \$15.00.



TYPE R CAMERA

Photomicrographic Camera—Model RA-5.—Bausch & Lomb. A very satisfactory moderate price outfit for use with any standard type of microscope; base consists of heavy base board, 12×45 in., with sections of optical bed supporting illuminating system and four brackets holding base of camera in position; illuminating system consists of a 5-ampere, 90° hand-feed arc lamp with

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rheostat for 110 volts, aspheric condenser in focusing mount, support for ray filter, one ground glass, one green glass and one blue glass, all mounted on a support adjustable for height and with micrometer adjustment for vertical and lateral adjustment; camera consists of heavy iron base, 10 x 12½ in., secured in position on base board by brackets, sliding microscope plate with clamps, camera bed 25 in. long, graduated to 60 cm with inclination joint, supporting standards, bellows, frames, bellows front board with light-tight connector for microscope, 4 x 5 in., double plate holder and ground glass focusing screen.

Each, \$155.00

Photomicrographic Camera—Model RM-5, Bausch & Lomb. Same as model RA-5, but with 6-volt Mazda lamp and transformer for 110 volts, alternating current.

Each, \$145.00.



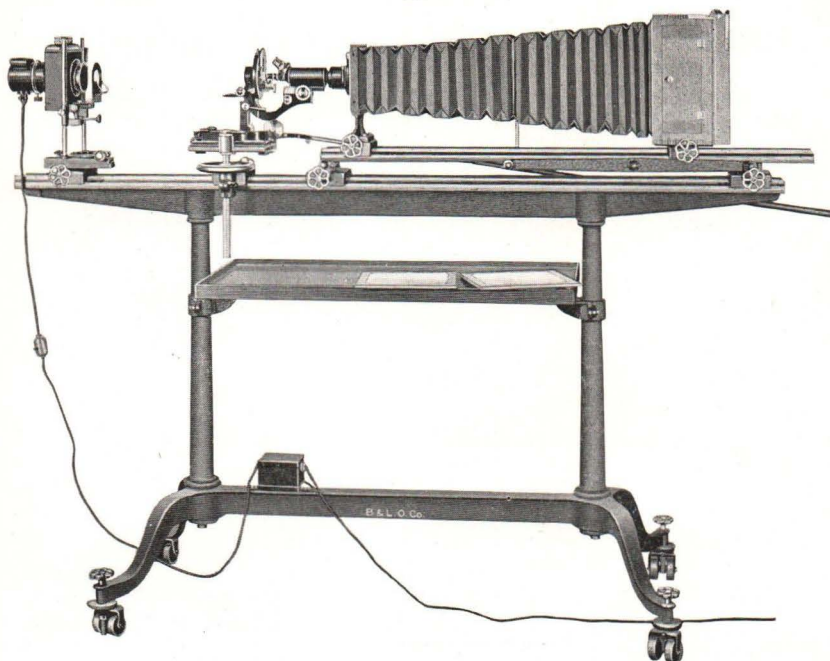
TYPE LD CAMERA

Photomicrographic Camera, Type LDA-7—Bausch & Lomb. Arranged so that it may be used for photomicrography, with microscope either in horizontal or vertical position, and also for drawing by directing the image on a horizontal drawing board by means of a reflecting mirror; drawing board is of wood, 14-in. square, adjustable on graduated front standard of supporting stand, and supplied with velvet hood on adjustable standard to shield board from light when desired; supporting stand is of cast iron, 39 in. high; illuminating system consists of 5-ampere, 90°, hand-feed arc lamp with rheostat for 110 volts and aspheric condenser; camera consists of optical bed, 25 in. long, graduated to 60 cm, with inclination joint, bellows, ground-glass, one double plate holder for 5 x 7-in. plates and wooden frames, attached to two supports on optical bed, upon which they are adjustable to bring center of camera into alignment with microscope; front board of camera is fitted with automatic shutter and light-tight connector for microscope.

Each, \$250.00.

Photomicrographic Camera, Type LDM-7—Bausch & Lomb. Same as Type LDA-7, but with 6-volt Mazda lamp and transformer for 110-volt, alternating current.

Each, \$240.00.



Photomicrographic Camera, Type GPA—Bausch & Lomb. Recommended to those who wish an apparatus of unusual rigidity and mechanical accuracy, particularly where high magnifications are to be undertaken; support for microscope is adjustable for height so that any standard type of microscope may be used and brought into alignment with the center of the camera parts; microscope plate may be turned 90° to enable one conveniently to look directly into microscope for searching the field to be photographed; supporting stand, of cast iron and massive construction, consists of two upright supports carrying optical bed at height of 42 in. from floor; optical bed, graduated in millimeters and centimeters with every fifth centimeter numbered, is 78 in. long and 4½ in. wide; illuminating system consists of 5-ampere, 90° hand-feed arc lamp with rheostat for 110 volts, aspheric condenser in focusing mount, support for ray filter, one ground glass, one blue glass and one green glass, all mounted on support adjustable for height, with micrometer adjustment for vertical and lateral movement and extension rods for feeding arc lamp and operating fine adjustment of microscope; camera has supports carrying tapering bellows, with draw of approximately 50 in.; rear support carries box with reversible adapter carrying laboratory single plate holder for 8x10-in. plates and kits for smaller sizes, also with two focusing screens, one ground glass with clear center and one clear glass with graduated cross lines in center, fitted with automatic shutter and light tight connector.

Each \$407.50.

Photomicrographic Camera, Type GPVA—Bausch & Lomb. Same as No. GPA, but with supplementary optical bed permitting use of camera in either horizontal or vertical position.

Each, \$472.50.

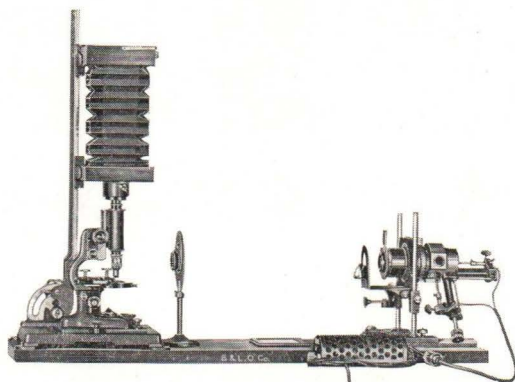
Photomicrographic Camera, Type GPM—Bausch & Lomb. Same as No. GPA, but with 6-volt Mazda lamp and transformer for 110-volt, alternating current.

Each \$397.50.

Photomicrographic Camera, Type GPVM—Bausch & Lomb. Same as No. GPA, but with supplementary optical bed, permitting use of camera in either horizontal or vertical position.

Each \$462.50.

BAUSCH & LOMB METALLOGRAPHIC EQUIPMENT



Metallographic Outfit, Type RSA-5—Bausch & Lomb. A moderate-priced equipment for use with any standard type of metallurgical microscope; base is of heavy base board, 12 x 45 in., with section of optical bed supporting illuminating system; illuminating system consists of 5-ampere, 90° hand-feed arc lamp with rheostat for 110-volts, aspheric condenser 60 mm in diameter in focusing mount, with removable iris diaphragm in front of mounting, also support for ray filter, one ground glass, one blue glass and one green glass, all mounted on rigid frame adjustable for height, with supplementary condenser and diaphragm on separate support; camera has heavy iron base, 10 x 12½ in., secured in position on base board; camera bed is 25 in. long, graduated to 60 cm, with inclination joint, light-tight connector for microscope, 4 x 5-in., double plate holder and ground-glass focusing screen.

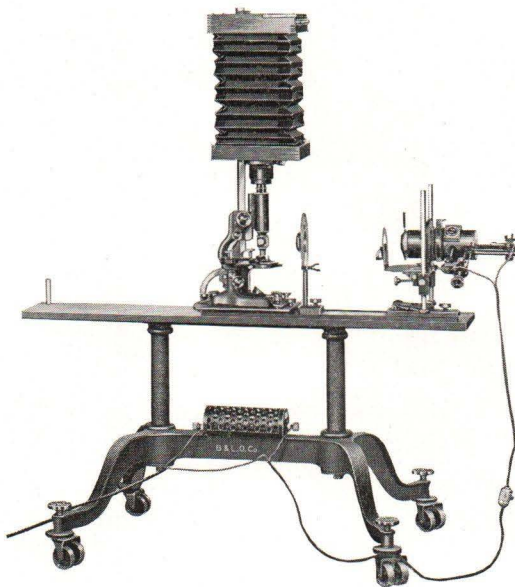
Each, \$175.00.

Metallographic Outfit, Type RSM-5—Bausch & Lomb. Same as type RSA-5, but with 6-volt Mazda lamp and transformer for 110-volts, alternating current.

Each, \$165.00.

Metallographic Outfit, Type RSA-5-FSM-9—Bausch & Lomb. Complete, with RSA-5 camera and FSM-9 microscope.

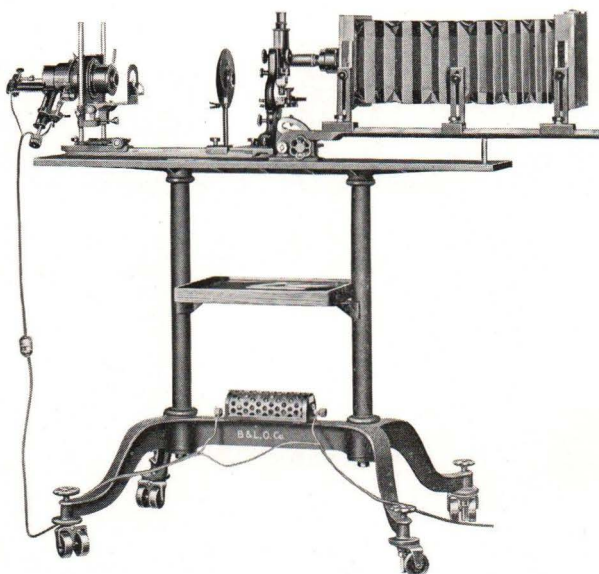
Each, \$382.50.



Metallographic Camera, Type MA—Bausch & Lomb. Height of camera is such that, with frame supporting ground glass near top of camera bed, it is convenient for observation for a person of average stature when standing, or, when tilted back for direct observation, is correct for a person seated; supporting stand is of cast iron, with top plate $45 \times 7\frac{3}{4}$ in. and 22 in. from floor carrying camera bed; optical bed for illuminating accessories and microscope plate; a 5-ampere, 90° hand-feed arc lamp, with rheostat for 110 volts, furnishes illumination, with aspheric condenser in focusing mount, with removable iris diaphragm in front of mounting, support for ray filter, one ground glass, one blue glass and one green glass filter, all mounted on rigid frame adjustable for height and having micrometer screws for vertical and lateral adjustment, with supplementary condenser and iris diaphragm on separate support; camera has optical bed, 25 in. long, graduated to 60 cm, with inclination joint, wooden frames, bellows, ground-glass focusing screen and one double plate holder for 5×7 -in. plates, the wooden frames being attached to two supports on optical bed, upon which they are adjustable to bring center of camera into alignment with microscope; front board of camera is fitted with automatic shutter and light-tight connector for microscope; microscope plate is attached to optical bed by means of clamping blocks and provided with three angle clamps, by means of which any standard make of microscope can be accommodated. Each, \$240.00.

Metallographic Camera, Type MM-7—Bausch & Lomb. Same as Type MA-7, but with 6-volt Mazda lamp and transformer for 110-volt, alternating current. Each, \$230.00.

Metallographic Outfit, Type MA-7-FSM-9—Bausch & Lomb. Complete with MA-7 camera, and FSM-9 microscope. Each, \$447.50.



Metallographic Camera, Type LA-7—Bausch & Lomb. Is intended particularly for use with the FSMT microscope, which makes it a very convenient instrument to work with, as one can look down through the microscope in the regular way, when visually examining the specimen, and then by sliding in the supplementary tube can cause the image to be formed on the ground-glass; supporting stand is of cast iron, with stop plate 45 x 7 $\frac{3}{4}$ in. and 39 in. from the floor; carrying camera bed, optical bed for illuminating accessories and microscope plate attached to optical bed by clamps and arranged to be fitted with long way either at right angles or parallel to optical bed; shelf is mounted between the standards for holding microscope accessories; illuminating system consists of 5-ampere, 90° hand-feed arc lamp, with rheostat for 110-volts, aspheric condenser 60 mm in diameter in focusing mount with removable iris diaphragm in front of mounting, support for ray filter, one ground glass, one blue glass, and one green glass filter, all mounted on rigid frame adjustable for height, with micrometer screws for vertical and lateral adjustment, and with extension rod for adjusting arc from rear of camera; has supplementary condenser and iris diaphragm on separate support; camera, with optical bed 25 in. long, graduated to 60 cm, with inclination joint, has wooden frame, attached to two supports on optical bed upon which they are adjustable to bring center of camera into alignment with microscope; provided with double plate holder for 5 x 7-in. plates, automatic shutter and light-tight connector.

Each, \$260.00.

Metallographic Camera, Type LM-7—Bausch & Lomb. Similar to type LA-7, but with 6-volt Mazda lamp and transformer for alternating current.

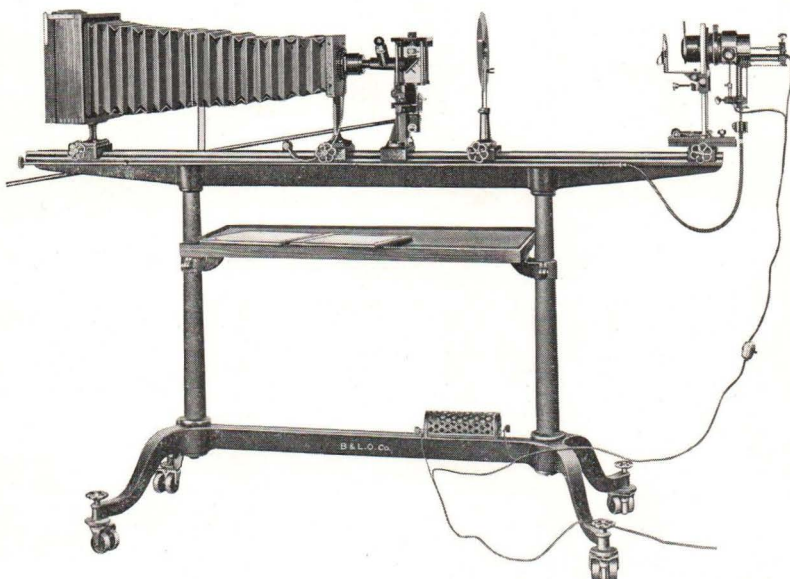
Each, \$250.00.

Metallographic Outfit, Type LA-7—FSMT-9—Bausch & Lomb. Complete, with LA-7 camera and FSMT-9 microscope.

Each, \$499.00.

Metallographic Outfit, Type LA-7—IF-9—Bausch & Lomb. Complete, with LA-7 camera and IF-9 microscope.

Each, \$485.00



Metallographic Camera, Type GSA—Bausch & Lomb. Recommended to those who wish to obtain an apparatus of unusual rigidity and mechanical accuracy, particularly where high magnifications are to be undertaken; supporting stand, of massive construction, is of cast iron, with feet fitted with both casters and leveling screws; two upright supports carry optical bed at height of 42 in. from floor; optical bed, 78 in. long and $4\frac{1}{2}$ in. wide, is graduated in millimeters and centimeters with every fifth centimeter numbered; wooden shelf for accessories is mounted between upright supports; illuminating system consists of a 5-ampere, 90° hand-feed arc lamp with rheostat for 110 volts, aspheric condenser, 60 mm in diameter in focusing mount with removable iris diaphragm in front of mounting, support for ray filter, one ground glass, one blue glass and one green glass, all mounted on rigid frame adjustable for height on two rods with micrometer screws for vertical and lateral adjustment and with extension rod for adjusting arc from rear of camera; supplementary condenser, 36 mm diameter, with iris diaphragm and light shield on adjustable support working in conjunction with aspheric condenser and vertical illuminator; camera supports carry tapering bellows with draw of approximately 50 in.; rear support is fitted with reversible adapter carrying single, book-form plate holder, insuring exact registration for 8x10-in. plates, with kits for smaller sizes and also with two focusing screens, one ground glass with clear center and one clear glass with graduated cross lines in center; hinged cover with two springs at rear of adapter permits plate holder to be placed easily in exact position without jarring apparatus; automatic shutter with light-tight connector. Each, \$375.00.

Metallographic Camera, Type GSM—Bausch & Lomb. Same as type GSA, but with 6-volt Mazda lamp and transformer for 110-volt, alternating current. Each, \$365.00.

Assayers' and Chemists' Supplies

Note—If apparatus is desired with flat supporting feet for attaching to laboratory table, in place of regular supporting stand and shelf, deduct \$20.00.

Supplementary optical bed, making it possible to use camera parts in vertical as well as horizontal position. Extra \$65.00.

Supporting table adjustable for height, which is attachable to the camera bed by means of regular clamping block, may be obtained for holding such specimens, at a price of \$50.00.

Above prices include rheostat for arc lamp for 110 volts. For 220 volts the extra charge is \$3.00.

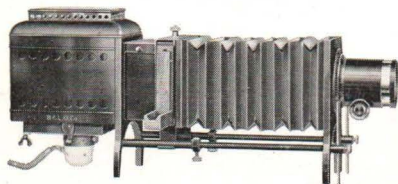
Transformer for Mazda lamp is for 110-volt, alternating current. For 220-volt, alternating current, the extra charge is \$3.00, while for direct current rheostat may be had instead of transformer for \$1.00 extra.

Metallographic Outfit, Type GSA-IL9—Bausch & Lomb. Type GSA camera and IL inverted microscope, complete. Each, \$657.50.

Metallographic Outfit, Type GSM-IL9—Bausch & Lomb. Type GSM camera and IL microscope, complete. Each, \$647.50.

Metallographic Outfit, Type GSAM-IL9—Bausch & Lomb. Similar to GSA-IL9 outfit, but with camera fitted with 6-volt Mazda lamp and transformer as well as arc lamp with rheostat. Each, \$669.50.

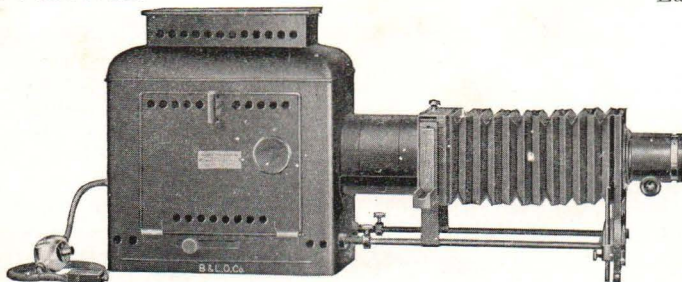
BAUSCH & LOMB BALOPTICONS



Model BM-12 Balopticon—Bausch & Lomb. Intended for lantern slide projection only; is an ideal instrument for classrooms, medium sized auditoriums, or the home; fitted with 400-watt, 115-volt Mazda lamp, 2 $\frac{5}{8}$ -inch diameter, 12-inch focus lens, and carrying case. Each, \$48.00.

Model BG-12 Balopticon—Bausch & Lomb. Same as Model BM-12, but with acetylene burner. Each, \$45.50.

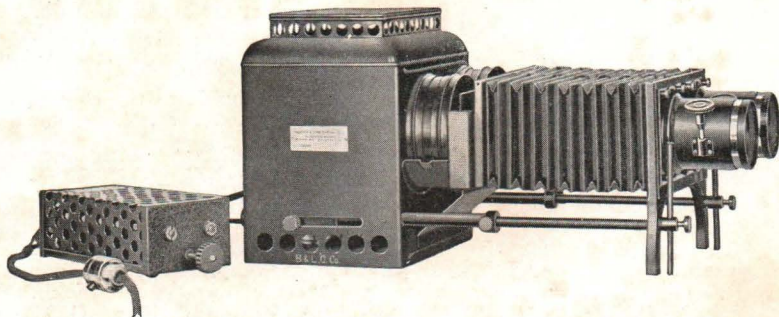
Model BMP-12—Balopticon—Bausch & Lomb. Similar to Model BM-12, but with special carrying case of wood covered with black leatherette, with metal corners and locks. Each, \$58.00.



Model CML-15 Balopticon—Bausch & Lomb. An ideal instrument for large halls and auditoriums, where the apparatus is to be placed a long distance from screen and where large picture is desired; two of these lanterns may be combined, one above the other, and their lenses fitted with our iris dissolvers, thus making an excellent dissolving equipment; furnished with 1000-watt, 115-volt Mazda lamp and 2 $\frac{5}{8}$ -inch diameter, 15-inch projection lens. Each, \$68.00.

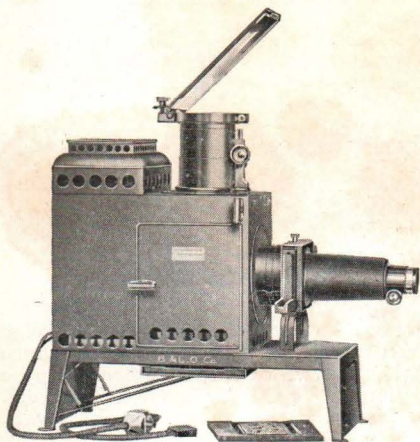
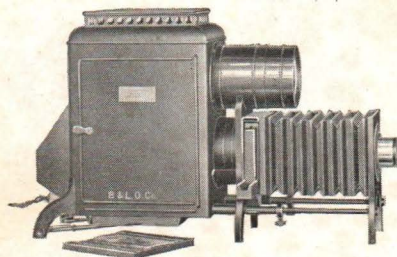
Double Dissolving CML-15 Balopticon.

Each, \$156.00.



Model BBM-12 Balopticon—Bausch & Lomb. Especially designed for dissolving view projection; it is compact and simple, with two optical units and two 400-watt Mazda lamps in the one lantern body; the two lamps are connected in series with rheostat with sliding contact, which gradually cuts the current off in one lamp as it permits it to come on in the other, thus not increasing the amperage at any time beyond the capacity of the ordinary house wiring; furnished complete with two 400-watt, 115-volt gas-filled Mazda lamps, two $2\frac{1}{8}$ -inch diameter, 12-inch focus projection lenses, dissolving rheostat and carrying case. Each, \$100.00.

Home Balopticon, Model BRMS-13—Bausch & Lomb. Arranged for projection of opaque objects and lantern slides, with instant interchange between the two forms of projection; is an ideal outfit for use in homes, small classrooms or Sunday School rooms; fitted with 400-watt, 115-volt, gas-filled Mazda lamp, connections and $4\frac{1}{2}$ x $4\frac{1}{2}$ -foot aluminum screen. Each, \$65.00.



Combined Balopticon, Model CRM-18—Bausch & Lomb. Projects photos, printed matter and solid objects, as well as lantern slides; has 1000-watt, gas-filled Mazda lamp, which is entirely automatic, silent and requiring no attention; provision is made for instant interchange between opaque object and lantern slide projection; fitted with 18-inch focus, 4-inch diameter lens for opaque objects and 10-inch focus, $1\frac{5}{8}$ -inch diameter lens for lantern slides. Each, \$150.00.

Combined Balopticon, Model CRM 25—Bausch & Lomb. Similar to Model CRM-18, but with 25-inch focus, 5-inch diameter lens for opaque objects and 12-inch focus, $2\frac{1}{8}$ -inch diameter lens for lantern slides. Each, \$250.00.